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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	Jack C. Wybenga, *et al.*
Serial No.	:	10/783,936
Filed	:	February 20, 2004
For	:	APPARATUS AND METHOD FOR MANAGING TRAFFIC AND QUALITY OF SERVICE IN A HIGH-SPEED ROUTER
Group No.	:	2616
Examiner	:	Christine T. Duong

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal. The review is requested for the reason(s) stated in the arguments below, demonstrating the clear legal and factual deficiency of the rejections of some or all claims.

Claims 1, 3-8, 10, 12-17, 19 and 21-23 stand rejected under 35 U.S.C. §102(e) as being anticipated by U. S. Patent Application Publication No. 2003/0103450 to *Chapman, et al.*

(hereinafter, simply "Chapman"). Claims 2, 11 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the Chapman reference in view of U. S. Patent Application Publication No. 2004/0179542 to *Murakami, et al.* (hereinafter, simply "Murakami"). Claims 9 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the Chapman reference in view of U. S. Patent Application Publication No. 2002/0135843 to *Gruia* (hereinafter, simply "Gruia"). All rejections are legally and factually deficient. For the convenience of the panel, Claim 1 requires:

> 1. A router for interconnecting external devices coupled to said router, said router comprising:
> a switch fabric; and
> a plurality of routing nodes coupled to said switch fabric, wherein each of said plurality of routing nodes comprises packet processing circuitry capable of transmitting data packets to, and receiving data packets from, said external devices and further capable of transmitting data packets to, and receiving data packets from, other ones of said plurality of routing nodes via said switch fabric,
> wherein said switch fabric is capable of detecting that the output bandwidth of a first output of said switch fabric has been exceeded and, in response to said detection, said switch fabric causes a first one of said plurality of routing nodes to slow an input rate of data packets transmitted from said first routing node to a first input of said switch fabric.

That is, Claim 1 recites a switch fabric that detects when a bandwidth of one of its outputs has been exceeded. In response, the switch fabric causes a routing node to slow its input rate of data packets to the switch fabric. Independent Claims 10 and 19 recite analogous limitations. This is not taught or suggested by any art of record, alone or in combination, and in fact the art teaches away from this feature.

Chapman describes a distributed bandwidth control system that operates by statically allocating portions of the bandwidth of an output port to each of the input ports that will be sending

packets to the output port. *See Chapman, paragraph [0096], lines 3-9, paragraph [0097], lines 5-12, paragraph [0102], lines 19-22, paragraph [0107], lines 1-7, and Figure 4.*

Each input port independently averages over time its use of its allocated portion of the output port E bandwidth. If the input port's average bandwidth use is less than its allocated minimum bandwidth allocated in the table of Figure 4, the input port sets to HI the priority of the packets it sends to port E through the switch fabric. If its use is between its allocated minimum and maximum bandwidths, it sets to LO the priority of its packets. If its average bandwidth use is equal to or greater than its allocated maximum, the input port stops sending packets to the switch fabric. *See Chapman, paragraphs [0106] and [0108], and Figure 5.*

That is, an input port throttles itself back when its average bandwidth usage exceeds its allocated portion of the total bandwidth of an output port; the port is not slowed by the switch fabric. Further, the circumstance of one input port reaching its individual bandwidth limit is necessary, but not sufficient, to indicate that the output port has reached its bandwidth limit.

Chapman describes the functionality of the switch fabric in paragraphs [0110]-[0114], as cited by Examiner Duong in the Advisory Action mailed April 4, 2008. The switch fabric recognizes the priority of requests arriving from different input ports, and schedules packet transmission to move HI priority packets before LO priority packets. *See paragraph [0110].* The switch fabric sends permission messages to input ports to ensure that higher priority traffic to an output port is served before lower priority traffic. *See paragraph [0111].* However, as described above, such higher and lower priority traffic indicates whether an input port is below or above its minimum bandwidth allocation, not whether an output bandwidth is exceeded, as concluded by Examiner

Duong. An input port only sends traffic when it is below its allocated portion of the output port bandwidth; when the input port is at or above its bandwidth portion, it sends no traffic. As a result, any slowing of LO priority traffic by the switch fabric is in response to the presence of HI priority traffic, not to an output port bandwidth being exceeded.

Further, despite Chapman describing in paragraph [0113] that packets are only released when the switch fabric controller sends a permission message to an input port, Chapman does not describe such permission messages overriding the decision by an input port (in steps 514 and 518 of Figure 5) to stop requesting service when its average bandwidth use exceeds its allocated portion of the bandwidth of an output port. The switch controller sends a permission message, not an override command.

Chapman states clearly that its method "allows the bandwidth on an outgoing link to be controlled at the input ports by simple algorithms, which both regulate traffic congestion and ensure a particular class of traffic a minimum allocated bandwidth over a route." *Chapman, paragraph [0014], lines 5-9 (emphasis added).*

Chapman teaches a system that controls the bandwidth of a switch fabric output by statically allocating bandwidth to logical pathways that converge upon the output. The interfaces that couple the switch fabric to external devices then independently control their input of packets to the switch fabric so as not to exceed their bandwidth allocation. The system detects the bandwidth of individual logical pathways, not their composite effect on the bandwidth of their common switch fabric output. It is the input ports that prevent an output port from exceeding its bandwidth; the fabric switch only serves as traffic cop between HI and LO priority packets. When an input port is in danger of

overrunning its allocated portion of bandwidth, it slows its own production of packets; the fabric switch plays no role in that function.

As the independent claims each include limitations not taught or suggested by any art of record, all rejections are legally and factually deficient.

CONCLUSION

As a result of the foregoing, the Applicant asserts that the claims in the Application are in condition for allowance over all art of record, and that the rejections are both factually and legally deficient, and respectfully requests this case be returned to the Examiner for allowance or, alternatively, further examination.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Munck Butrus Deposit Account No. 50-0208.

Respectfully submitted,

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